pISSN: 1906 - 6406 The Scholar: Human Sciences
eISSN: 2586 - 9388 The Scholar: Human Sciences
https://assumptionjournal.au.edu/index.php/Scholar

Factors Impacting E-shopping Intention Among Undergraduate Students in a Public University in China

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Received: April 4, 2024. Revised: September 2, 2024. Accepted: Frebuary 18, 2025.

Abstract

Purpose: In developed countries, there has been extensive research on the individual intentions and behaviors of e-shopping. This study explores the impact of college undergraduate students' e-shopping usefulness, attitude, and intention in Guangxi University of Science and Technology (GXUST), China. The conceptual framework suggested a causal relationship between perceived value, trust, ease of use, usefulness, customer service, attitude, and e-shopping intention. **Research design, data, and methodology:** This study adopted a quantitative method (n=500), distributing questionnaires to undergraduate students in GXUST. The nonprobability sampling contains judgmental, quota, and convenience sampling in distributing online questionnaires to collect the data. Confirmatory factor analysis and structural equation modeling were used to analyze the collected data and validate the constructs' model fit, reliability, and validity. Result: Seven hypotheses have been proven to complete the survey purpose. The results showed that perceived value, trust, ease of use, and usefulness significantly impact attitudes toward e-shopping. Ease of use has a significant impact on usefulness. Attitude presented the strongest impact on e-shopping intention, followed by customer service. **Conclusion:** Online operators should optimize the e-shopping environment, create more convenient conditions, and improve the effectiveness and satisfaction of e-shopping to promote the rapid development of e-commerce.

Keywords: Perceived Value, Trust, Usefulness, Attitude, E-Shopping Intention

JEL Classification Code: E44, F31, F37, G15

1. Introduction

The Internet has created a new environment for e-commerce and provided opportunities to connect businesses worldwide (Alkailani & Kumar, 2011). The frequency and volume of the Internet have increased; the main reason is that it is an important tool for transferring information quickly to users and provides more browsing options in the shortest possible time. E-shopping opens new ways for businesses to transact, known as business-to-customer (B2C), where customers can use Internet technology to buy and sell products and services (Masoud, 2013). According to George (2002), the birth of the Internet is the reassessment of electronic technology and provides customers with more information about buying products by providing more choices, which was impossible in the past, and the customer has spent a few days searching in the market.

With the expansion of various Internet devices, e-retailers such as Amazon and Alibaba have integrated AI technology to bring innovation to products and services. It provided intelligent consumer services, analyzed consumer behavior, and optimized logistics, which has changed how we shop and sell online (Bandara et al., 2020).

According to research, Internet usage and e-shopping are most common among 18-30-year-old university students, even though they do not have enough money to go shopping. University students have great intentions towards e-shopping (Edmunds et al., 2010). In developed countries, there has been extensive research on the individual intentions and behaviors of e-shopping. However, there needs to be more

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studies in China, especially among university students, where e-shopping is becoming increasingly popular among young people. This study focuses on the factors impacting usefulness, attitude, and e-shopping intention towards the undergraduate students in GXUST. The study aims to understand the undergraduate student's e-shopping situation, the most purchased website, and the impact of perceived value, trust, usefulness, ease of use, customer service, attitude, and e-shopping intention of the undergraduate students in GXUST.

2. Literature Review

2.1 Perceived Value

The definition of perceived value was that it was focused on money cost related to the quality of the product (Lichtenstein et al., 1993), which considered if the perceived value achieved greater the willingness to accept a new product by customers greater. The customers attempted to maximize the good value for money, demanding better quality or service at a low price (Kacen et al., 2012). Therefore, perceived value became a determining factor that impacted customer attitude and intention towards a product or service. Ultimately, it would determine consumers' willingness to buy.

Perceived value refers to consumers' perception of what they have lost and gained. In fact, it was partly an analysis of costs and benefits. Building trust in online shopping lets customers perceive that the retailer adds value. On the other hand, reducing the complexity of certain procurement processes would lead to fewer procurement-related transactions, which would also increase uncertainty (Harris & Goode, 2004). Accordingly, a hypothesis is formed:
H1: Perceived value has a significant impact on attitude.

2.2 Trust

According to Gunawan (2011), trust is an attitude that expresses liking and sticking to a certain product or brand. According to Mao (2010), trust was the belief that one person would find what they wanted from the other rather than what they feared. At the same time, according to Siagian (2014), trust was a key factor among the many factors that impacted online stores' buying and selling transactions. Trust could be referred to as an individual's belief in the trustworthiness of others, which could be determined by their perceived integrity, kindness, and ability (Lin, 2011; McKnight et al., 2002). Abbad et al. (2011) and Faqih (2011) regarded trust as a major influencing factor in e-commerce, especially online shopping. Previous e-commerce research stressed the importance of trust as a determinant of an individual's attitude or willingness to buy (Limbu et al., 2012).

Previous research confirmed that trust was closely related to attitudes toward products and services in online transactions (Kuan & Bock, 2007; Pavlou, 2003) and attitudes toward purchase behavior. Therefore, to encourage customers to trade, sellers needed to provide mechanisms related to trust (Dayal et al., 1999; McKnight et al., 2002). A stable and secure payment system, a clear privacy protection policy, and adopting third-party certification were some practices that built institutional trust for customers (Gefen et al., 2003). Accordingly, a hypothesis is formed:
H2: Trust has a significant impact on attitude.

2.3 Ease of Use

"Ease of use" was defined as an individual's belief that using the new system or technology would be effortless, including both the physical and mental effort (Davis, 1989, 1993). Davis (1989) identified that the ease of use affected consumers' attitudes via self-efficacy and instrumentality. Applied to current research, the ease of use meant that online shopping was simple and easy to operate. Also, some authors considered that ease of use was reflected in the improvement of consumers' motivation for online shopping, which maximized the convenience of technology by reducing the physical and mental labor required to complete the offline shopping process (Hansen, 2006).

Ease of use achieved good results by linking a pleasant system experience to intrinsic motivation by solving problems encountered along the way (Venkatesh & Davis, 2000). Existing studies revealed that ease of use had been used in the research of e-payment (Kim et al., 2010; Schierz et al., 2010), e-trade (Yang, 2005), and e-shopping (Wong et al., 2012). Accordingly, below hypothesis are formed:
H3: *Ease of use has a significant impact on attitude.*
H4: *Ease of use has a significant impact on usefulness.*

2.4 Usefulness

Usefulness was defined as an individual's belief that using a new technology would help enhance the effectiveness of his work (Davis, 1989, 1993). Usefulness represents the user's evaluation of the efficacy of the system use, such as the good effect and high efficiency of the system in completing a specific task. In other words, it reflected the expected or achieved convenience and benefits that could be obtained through the system. In this context, usefulness could be shown that the use of online shopping by customers could make customers realize the usefulness and convenience of shopping (Zhou et al., 2007).

Chuah et al. (2016) suggested that usefulness was one of the major driving factors of e-shopping. When consumers

realize that e-shopping helps improve their shopping effectiveness because e-shopping is not limited by time and place, this perception would positively impact them. Usefulness was affected by the ease of use because if online shopping were easy to operate, then its effectiveness would increase. An e-shopping website with a good user experience would make consumers feel that e-shopping was useful, thus further improving the frequency of consumers using e-shopping (Yang, 2010). Accordingly, a hypothesis is formed:
H5: Usefulness has a significant impact on attitude.

2.5 Customer Service

The customer service of an online store is the service provided before, during, and after the consumer's purchase ((Wolfinbarger & Gilly, 2003), which could be presented in the form of pure service or physical form (Kotler & Armstrong, 2016). Given the increasing competition between online and physical shopping, many online stores were attracting and retaining customers by improving customer service. Therefore, quality customer service has become important for online stores to enhance their competitive advantage. (Cao et al., 2018; Kotler & Armstrong, 2016; Levy & Weitz, 2016).

Jin and Oriaku (2013) considered that online customer service can provide consumers with greater flexibility and convenience while reducing costs for online retailers. Online retailers could easily meet the needs of consumers by offering interactive, customized, and responsive services. These services often promoted friendly relationships between merchants and customers, giving online retailers a better competitive advantage (Chidambaram, 2001). Therefore, online customer service was considered a key factor influencing consumer attitudes and behaviors in the online shopping environment (Jin & Oriaku, 2013; Wolfinbarger & Gilly, 2003). Accordingly, a hypothesis is formed:
H6: Customer service has a significant impact on e-shopping intention.

2.6 Attitude

Attitude determines whether a person would consider and weigh whether the behavior is good or bad and whether a person wants to take that behavior (Armitage et al., 2015). In the context of online shopping, many researchers agreed that shopping attitudes and intentions had a positive and significant impact (Chen & Tung, 2014; Hsu et al., 2014). In addition, a good attitude often makes online transactions effortless and increases consumers' willingness to accept online shopping (Pantano & Viassone, 2015; Poncin & Mimoun, 2014). If a consumer had a positive attitude towards online shopping, he would have been strongly willing to shop online.

Cho and Sagynov (2015) argued that consumers' willingness to buy online increases when their perception of convenience associated with online shopping increases. Convenience includes factors such as time, effort, and anxiety (Cho & Sagynov, 2015) and the ability to compare many products in one place at any time (Hung et al., 2014). Anesbury et al. (2016) also analyzed the positive impact of convenience on people's attitudes toward online shopping. Accordingly, a hypothesis is formed:
H7: Attitude has a significant impact on e-shopping intention.

2.7 E-shopping Intention

The theory of planned behavior (TPB) revealed that an individual's behavior was determined by his intention for what he performed (Ajzen, 1985, 1991). KamalulAriffin et al. (2018) defined e-shopping intentions as structures that provide the main drivers for consumers' online shopping intentions. Liebana-Cabanilla et al. (2018) and Zhang et al. (2012) considered that intention was the most powerful driver of an individual's actual behavior toward using new technology. Existing studies showed that attitude had a positive correlation with intention. The higher the level of trust in online vendors, the higher the intention to shop online. (Ponte et al., 2015). According to the study of Beneke et al. (2010), when customers felt that they could do e-shopping quickly and efficiently through their mobile devices, their intention to use e-shopping would increase.

3. Research Methods and Materials

3.1 Research Framework

The conceptual framework is constructed by the theories of the Technology Acceptance Model (TAM), the Theory of Planned Behavior (TPB), and the Theory of Reasoned Action (TRA). It consists of four theoretical models. Firstly, Lim (2015) studied the effect of perceived value on attitude and attitude on e-shopping intention. Secondly, the study of Akroush and Al-Debei (2015) found that trust positively impacted attitudes toward online shopping. The third study was conducted by Bigné-Alcañiz et al. (2009), who suggested attitude was affected by the ease of use and usefulness; ease of use a positive impact on usefulness, and the attitude also impacted on e-shopping intention. The fourth study was carried out by Ha and Stoel (2009), who considered that customer service positively affects e-shopping intention. The conceptual framework of this study is proposed in Figure 1.

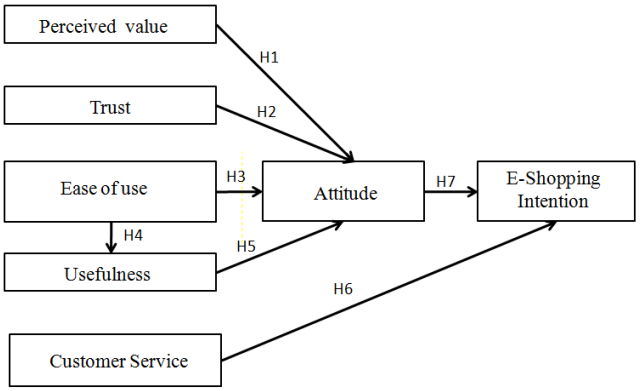

Figure 1: Conceptual Framework

H1: Perceived value has a significant impact on attitude.
H2: Trust has a significant impact on attitude.
H3: Ease of use has a significant impact on attitude.
H4: Ease of use has a significant impact on usefulness.
H5: Usefulness has a significant impact on attitude.
H6: Customer service has a significant impact on e-shopping intention.
H7: Attitude has a significant impact on e-shopping intention.

3.2 Research Methodology

The researcher utilized nonprobability sampling as a quantitative method with a questionnaire distributed online to the target undergraduate students who study in GXUST, collecting and analyzing the data on key factors that significantly impact consumers' e-shopping intentions. The survey contains three parts. The first part is the screening questions, which are utilized to select suitable respondents. Secondly, the basic information or demographic characteristics are gender, major, age, area, and ways of e-shopping. Lastly, a 5-point Likert scale was used to measure seven proposed variables, ranging from strongly disagree (1) to strongly agree (5), to analyze all seven hypotheses. The researcher's rating of the index of item objective congruence (IOC) and pilot test for 30 respondents has been tested for the pilot test.

In this study, validity and reliability were tested by Cronbach's Alpha. After testing the reliability, the questionnaire was distributed to the target respondents, which received 500 valid responses. The researcher used statistical software to analyze the collected data and then used the Confirmatory Factor Analysis (CFA) to test the convergence accuracy and validation. The model fit measurements were calculated using the overall test with the given data to ensure the validity and reliability of the model. Lastly, the researcher utilized the Structural Equation Model (SEM) to test the effect of variables.

3.3 Population and Sample Size

The target population in this paper is undergraduate students who have experienced e-shopping for the selected three main subjects in GXUST. The survey was given to 560 respondents, and after the data screening process, 500 responses were used in this study.

3.4 Sampling Technique

The researcher used nonprobability and judgmental sampling to select the three main subjects: engineering, business, humanities, and social sciences. Then, quota sampling was used to select the undergraduate population size in Table 1. The researcher then applied purposive and convenience sampling to distribute the questionnaire online.

Table 1: Sample Units and Sample Size

Three Subjects	Population Size	Proportional Sample
Engineering	10385	347
Business	2957	99
Humanities and Sciences	1620	54
Total	**14962**	**500**

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

The profile of the demographic targets 500 participants is shown in Table 2. The proportion of male respondents is 53.6%, and female respondents occupy 46.4%. The age of 18-20 is the biggest part due to the undergraduate students, which account for 65.4%, immediately followed by 21-23 years old 32.8%, 1.8% of 24-26 years old, and 0% of More than 26 years old. Regarding the area of respondents, most respondents are rural, at 55.4%, and urban, at 44.6%. In terms of way which the app most frequently used, Taobao accounts for 39%, followed closely by Tmall, which is 24.6%, and then Jingdong and Pinduoduo, which occupy 18.4% and 13.4%. The last is Amazon at 4.6%.

Table 2: Demographic Profile

Demographic and Behavior (N=500)		Frequency	Percentage
Gender	Male	268	53.6%
	Female	232	46.4%
Age	18-20 years old	327	65.4%
	21-23 years old	164	32.8%
	24-26 years old	9	1.8%
	More than 26 years old	0	0
	Rural	277	55.4%
	Urban	223	44.6%

Demographic and Behavior (N=500)		Frequency	Percentage
App	Tmall	123	24.6%
	Taobao	195	39%
	Jingdong	92	18.4%
	Pinduoduo	67	13.4%
	Amazon	23	4.6%

4.2 Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) was applied in this study. All items of each variable are remarkable and represent factor loading to test discriminant validity. The factor loading of each item was significant, and acceptable values were forecasted using odds of fit. Factor loading above 0.5 and a p-value lower than 0.05 were considered significant to verify the convergent validity (Vongurai, 2024). Composite reliability greater than 0.75 is ideal (Khan & Qudrat-Ullah, 2021), and the average variance extracted is above 0.5 (Hsu et al., 2015) in Table 3. So, all the tests are significant.

Table 3: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	Source of Questionnaire (Measurement Indicator)	No. of Item	Cronbach's Alpha	Factors Loading	CR	AVE
Perceived Value (PV)	Kacen et al. (2012)	3	0.711	0.720-0.752	0.780	0.542
Trust (TR)	Gunawan (2011)	4	0.888	0.780-0.962	0.904	0.705
Ease of use (EOU)	Davis (1989)	3	0.954	0.763-0.860	0.842	0.641
Usefulness (UF)	Zhou et al. (2007)	3	0.794	0.805-0.920	0.883	0.716
Customer Service (CS)	Wolfinbarger and Gilly (2003)	4	0.728	0.642-0.859	0.796	0.499
Attitude (ATT)	Armitage et al. (2015)	4	0.835	0.660-0.919	0.862	0.613
E-shopping Intention (ESI)	Ajzen (1985)	3	0.912	0.857-0.939	0.927	0.809

The square root of the average variance extracted showed that all the relationships surpassed any interrelated coefficient for the variables revealed in Table 4. Furthermore, in CFA testing, GFI, AGFI, NFI, CFI, TLI, and RESEA are applied as a pointer for model fit.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	≤ 5.0 (Wheaton et al., 1977)	1.769
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.938
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.920
NFI	≥ 0.80 (Wu & Wang, 2006)	0.943
CFI	≥ 0.80 (Bentler, 1990)	0.974
TLI	≥ 0.80 (Sharma et al., 2005)	0.969
RMSEA	< 0.08 (Pedroso et al., 2016)	0.039
Model Summary		**Acceptable Model Fit**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

The value of convergent and discriminant validity was greater than the acceptability, shown in Table 5. Hence, convergent validity and discriminant validity were available.

Table 5: Discriminant Validity

	PV	TR	EOU	UF	CS	ATT	ESI
PV	**0.736**						
TR	0.295	**0.840**					
EOU	0.438	0.283	**0.801**				
UF	0.237	0.447	0.288	**0.846**			
CS	0.219	0.305	0.171	0.146	**0.706**		
ATT	0.404	0.458	0.456	0.367	0.345	**0.783**	
ESI	0.19	0.408	0.275	0.324	0.256	0.374	**0.899**

Note: The diagonally listed value is the AVE square roots of the variables
Source: Created by the author.

4.3 Structural Equation Model (SEM)

The structural equation model (SEM) verified the causal relationship between the model's variables and included the structure's measurement error coefficient. According to Chin (1998), SEM was used to evaluate the constructs' reliability and validity and test the model's hypothesis. The goodness of fit data for the Structural Equation Model (SEM) is measured as shown in Table 6. The calculation in SEMs and the model adjusted were used by the SPSS AMOS version 26. According to Table 6., the CMIN/DF=3.265, GFI=0.880, AGFI=0.853, NFI=0.888, CFI=0.919, TLI=0.909, RMSEA=0.067, the result was shown good fit and acceptable. It was in harmony with empirical data.

Table 6: Goodness of Fit for Structural Model

Fit Index	Acceptable Criteria	Statistical Values
CMIN/DF	≤ 5.0 (Wheaton et al., 1977)	3.265
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.880
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.853
NFI	≥ 0.80 (Wu & Wang, 2006)	0.888
CFI	≥ 0.80 (Bentler, 1990)	0.919
TLI	≥ 0.80 (Sharma et al., 2005)	0.909
RMSEA	< 0.08 (Pedroso et al., 2016)	0.067
Model Summary		**Acceptable Model Fit**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

4.4 Research Hypothesis Testing Result

The hypotheses of each variable were significant, and all the hypotheses were supported, as illustrated in Table 7. Attitude had the strongest impact on e-shopping intention, which resulted in 0.363, followed by ease of use impacting usefulness(β=0.341), ease of use impacting attitude (β=0.316), trust impacting attitude (β=0.306), perceived value impacting attitude (β=0.219), usefulness impacting on attitude (β=0.170), and customer service impacting on e-shopping intention (β=0.141).

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: PV→ATT	0.219	4.551*	Supported
H2: TR→ATT	0.306	7.116*	Supported
H3: EOU→ATT	0.316	6.322*	Supported
H4: EOU→UF	0.341	6.815*	Supported
H5: UF→ATT	0.170	3.581*	Supported
H6: CS→ESI	0.141	2.973*	Supported
H7: ATT→ESI	0.363	7.716*	Supported

Note: * p<0.05
Source: Created by the author

According to the results in Table 7, we can accurately summarize that:

H1 has verified that perceived value is one of the key factors impacting attitude; standardized path coefficient of 0.219. More and more consumers try to maximize the benefit of the money spent, that is, to buy good quality goods at a low price. Therefore, perceived value has become the decisive factor that affects consumers' purchasing attitudes and final purchase decisions (Kacen et al., 2012). Regarding H2, the data analysis showed that ta rust significantly impacts e-shop attitudes, contributing to the standardized coefficient of 0.306. Trust has positively impacted attitude and is reflected in two aspects: one is the trust of the website (Kang et al., 2015), and the other is the seller's trust (Oghazi et al., 2018). With H3, H4, and H5, ease of use and usefulness have significantly impacted attitude, representing the standardized coefficients of 0.316 and 0.170. The standardized coefficient about ease of use on usefulness is 0.341. According to the technology acceptance model (TAM), Davis et al. (1989) identified that ease of use and usefulness significantly impact an individual's attitude toward accepting technology. Customer service played an important role in e-shopping intention, with a standardized coefficient of 0.141 about H6. Consumers thought of customer service failures as a very significant issue that could negatively impact their willingness to buy in the future (Chang & Wang, 2012). Finally, the value of attitude and e-shopping intention is 0.363. A good attitude often makes online transactions effortless and increases the intention to accept e-shopping (Pantano & Viassone, 2015; Poncin & Mimoun, 2014).

5. Conclusion and Recommendation

5.1 Conclusion

This study concerns the factors that impact usefulness, attitude, and e-shopping intention towards undergraduate students who study at the Guangxi University of Science and Technology. Constructed the conceptual framework and proposed the hypotheses to investigate how the perceived value, trust, ease of use, and usefulness impact attitude, how ease of use impacts usefulness, and how customer service and attitude impact e-shopping intention. The questionnaires were developed and sent online. The data analysis was conducted to explain the influence on students' attitudes and intentions in shopping. Confirmatory and Analysis (CFA) measured and tested the validity and reliability. The structural Equation Model (SEM) was used to explain and analyze the factors that impacted undergraduate students' attitudes and intentions of e-shopping.

Although undergraduate students have a similar history of Internet use, due to the different characteristics of websites, they have formed different e-shopping intentions and experiences in the process of Internet use, which has a key impact on their Internet cognition and directly determines and affects their future e-shopping attitude and intentions. It was found that undergraduates' attitude towards e-shopping directly affects whether they do e-shopping. Undergraduate students all recognize the impact of ease of use and trust on e-shopping intention. However, the usefulness and customer service of e-shopping needs to be improved.

5.2 Recommendation

Nowadays, undergraduates have the ability and tendency to do e-shopping. They are more personalized in e-shopping and are convenient and inexpensive. At the same time, undergraduates will decide whether to purchase according to the ease of use and usefulness of the website, the security of the network, their economic situation, and consumption concept. As undergraduates are about to enter society and become the main online consumers, businesses must pay special attention to them. Because they not only have a strong purchasing power but also an extremely strong shopping demand. Businesses need to grasp this and give the right guidance. They will certainly break out with more robust growth potential in the future, but they can also develop e-shopping and e-commerce.

5.3 Limitation and Further Study

Undergraduate students are affected by many factors when they experience e-shopping. In addition to the factors such as perceived value, trust, ease of use, usefulness, customer service, attitude, and e-shopping intention studied in this paper, there are also various other factors, such as innovation, type, and characteristics of commodities etc. At the same time, undergraduate students will also consider many factors related to their conditions when shopping online, and external factors such as gender, age, income, and Internet frequency will also impact undergraduates' shopping intentions. Future studies can expand the study of influencing factors and combine external and internal factors after referring to domestic and foreign maturity scales to form a more complete research system and strive for a more comprehensive understanding.

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